

Appl. No. : 10/764,012  
Filed : January 23, 2004

### REMARKS

Applicant thanks the Examiner for the interview on July 31, 2007. In accordance with discussions during the interview, Applicant is filing this Amendment with a Request for Continued Examination to overcome the rejections of record.

In paragraph 5 of the Office Action, the Examiner rejected Claims 1-4, 7-9, 28-38 and 40-65 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,830,776 to Carlson et al. ("Carlson") in view of U.S. Patent No. 4,439,548 to Weisman. For the reasons discussed in the interview and for the reasons set forth herein, the pending claims are patentable over Carlson in view of Weisman.

**A. INDEPENDENT CLAIMS 1 & 44 ARE PATENTABLE OVER CARLSON IN VIEW OF WEISMAN BECAUSE WEISMAN TEACHES AWAY FROM A SINGLE POLYURETHANE AND OPTIONAL POLYISOCYANURATE MATRIX**

Claims 1 and 44 of the present application recite the following:

A polymer composite material, comprising:

(1) only one polymer matrix, the matrix consisting of a polyurethane and an optional polyisocyanurate, the polyurethane formed by reaction of a reaction mixture, comprising:

(a) one or more monomeric or oligomeric poly- or di-isocyanates;

(b) a first polyol selected from the group consisting of polyether polyols and polyester polyols, the first polyol having a first hydroxyl number; and

(c) a second polyol selected from the group consisting of polyether polyols and polyester polyols, the second polyol having a second hydroxyl number less than the first hydroxyl number, and forming the polyurethane, wherein the polyurethane is less rigid than a second polyurethane that would be formed by the reaction of the first polyol and the one or more monomeric or oligomeric poly- or di-isocyanates in the absence of the second polyol, . . . ; and

(2) an inorganic particulate material dispersed in the polymer matrix, the inorganic particulate material being about 60 to about 85 wt%, based on the total weight of the composite material.

As discussed in the interview, both Carlson and Weisman fail to teach or suggest that the composite material includes a single polymer matrix consisting of a polyurethane and an optional polyisocyanurate formed by reaction of multiple polyols with an isocyanate.

First, Weisman teaches that "the product formulation includes ... a mixture of polyol and polymer/polyol." As noted in col. 4, lines 55-56, "[p]olymer/polyols are characterized by the presence of polymer to polyol grafted species" In other words, Weisman's reaction mixture includes a polymer matrix which is reacted with the polyol to form a polymer/polyol matrix, prior to reaction of the polymer/polyol with the isocyanate to produce the polyurethane. Thus, Weisman fails to teach that the composite material consists of only one polymer matrix.

Second, Weisman also teaches that "polyvinyl chloride resin" is added into the reaction mixture. Weisman notes that "streams or tentacles of PVC ... interlace the entire cellular structure of the urethane to produce a three-dimensional skeletal network therein." Thus, Weisman teaches that its polyurethane networks (which consists of multiple polymer matrices as noted above) should also comprise a PVC polymer matrix. As such, Weisman fails to teach or suggest the limitation of Claim 1 that the only one polymer matrix consists of polyurethane and optional polyisocyanurate.

Weisman uses these additional polymer matrices to alter the physical properties of the polyurethane. As noted in col. 1, lines 30-32, ordinary polyurethane foam cannot be subjected to dielectric heating processes. The addition of PVC renders the polyurethane responsive to dielectric heating. The polymer/polyols suggested by Weisman include either acrylonitrile polymer or styrene polymer which also enhance the dielectric heating properties of the polyurethane (col. 10, lines 5-24). Thus, Weisman makes clear that additional polymer components and their respective matrices are required.

Carlson teaches that fly ash beads may be incorporated into a polymeric binder such as a urethane binder. Weisman teaches away from Carlson as it makes clear that other polymer matrices beyond that of a polymeric binder are necessary to produce a product having the desired dielectric properties. Thus, Applicant believes that the combination of Carlson & Weisman is improper since Weisman clearly teaches away from the single urethane binder of Carlson.

Applicant also notes that Weisman fails to disclose the particular polyols recited in Claim 1. Specifically, Weisman discloses in col. 6, lines 28-36:

In a preferred embodiment of the invention, a polyol blend is employed comprising a polyether triol, having a molecular weight range of about 1,000-8,000 and a hydroxyl number range of about 20-175, and a diol having a molecular weight range of about 60-3,000 and a hydroxyl number range of about

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50-200. The weight ratio of polyether triol to diol, according to this preferred embodiment, can range from about 1:8 to about 6:8.

Applicant believes that polyether does not modify the word diol. Claims 1 and 44 recite that each of the first polyol and the second polyol are selected from the group consisting of polyether polyols or polyester polyols. As the diol of Weisman is not clearly a polyether polyol or a polyester polyol, Weisman fails to teach this limitation of Claim 1.

For the reasons stated above, Applicant believes that Claims 1 and 44 are patentable over the cited references. Claims 2-4, 7-9, 28-38, 40-43, 46-61 are dependent on Claims 1 and 44 and are patentable over the cited references for the reasons stated above, as well as for other novel and nonobvious features recited therein. Thus, Applicant respectfully requests that the Examiner pass these claims to allowance.

**B. CLAIM 62 IS PATENTABLE OVER CARLSON IN VIEW OF WEISMAN BECAUSE BOTH REFERENCES FAIL TO TEACH OR SUGGEST THE LIMITATION THAT THE WATER BLOWING AGENT IS ABOUT 0.10 WT% TO ABOUT 0.40 WT%, BASED ON THE WEIGHT OF THE TOTAL POLYOL**

Claim 62 of the present application has been amended to recite "a blowing agent comprising water, the water being about 0.10 wt% to about 0.40 wt%, based on the weight of the total polyol." Support for this claim amendment may be found on page 10, lines 17-20 of the originally filed specification. By amending the claim, the amount of water does not fall within ranges disclosed by Carlson or Weisman.

In col. 6, lines 59-66, Carlson describes that a polyurethane formulation consist of various components including a "supplemental blowing agent." However, Carlson fails to specify the amount of supplemental blowing agent used in the formation of the polyurethane. Weisman teaches in col. 7, lines 11-13 that water is generally employed in an amount from about 1.0 to 6.0 parts by weight per 100 parts by weight of the polyol. Thus, Weisman fails to teach or suggest that the water is present in an amount of about 0.1 wt % to about 0.4 weight %, based on the total weight of the polyol.

On page 10, lines 11-20 of the present specification, the advantages of using water as a blowing agent are discussed. The specification makes clear that the amount of water present in the system has an important effect on the density of the resulting composite material. If excess

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water is used in formation of the polyurethane composite, this leads to a product having undesirable densities and in turn, a product having other undesirable physical properties such as flexural strength and flexural modulus. The amount of water specified by Weisman is not the preferred amount, particularly when used in Applicant's polyurethane system. As such, the preferred water content as specified in Claim 62 represents a nonobvious advance over the combination of Carlson and Weisman.

For the reasons stated above, Applicant believes that Claim 62 is patentable over the combination of Carlson and Weisman. Claims 63-65 are dependent on Claim 62 and are patentable over the cited references for the reasons stated above, as well as for other novel and nonobvious features recited therein. Thus, Applicant respectfully requests that the Examiner pass Claims 63-65 to allowance.

#### **Conclusion**

For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding *Office Action* are inapplicable to the present claims. Any remarks in support of patentability of one claim should not be imputed to any other claim, even if similar terminology is used. Any remarks referring to only a portion of a claim should not be understood to base patentability on solely that portion; rather, patentability must rest on each claim taken as a whole. Applicant does not concede or acquiesce to any of the rejections in the *Office Action*. Applicant reserves the right to later contest one or more of these issues in a later response. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicant's attorney in order to resolve such issue promptly.

#### **No Disclaimers or Disavowals**

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather,

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any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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